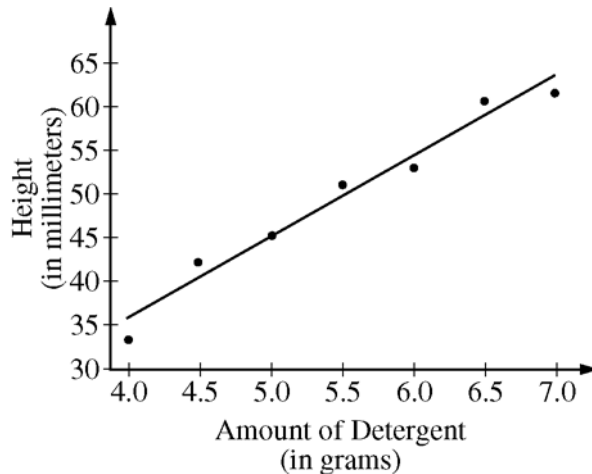


## 2006 AP<sup>®</sup> STATISTICS FREE-RESPONSE QUESTIONS

2. A manufacturer of dish detergent believes the height of soapsuds in the dishpan depends on the amount of detergent used. A study of the suds' heights for a new dish detergent was conducted. Seven pans of water were prepared. All pans were of the same size and type and contained the same amount of water. The temperature of the water was the same for each pan. An amount of dish detergent was assigned at random to each pan, and that amount of detergent was added to the pan. Then the water in the dishpan was agitated for a set amount of time, and the height of the resulting suds was measured.

A plot of the data and the computer output from fitting a least squares regression line to the data are shown below.



| Predictor | Coef   | SE Coef | T     | P     |
|-----------|--------|---------|-------|-------|
| Constant  | -2.679 | 4.222   | -0.63 | 0.554 |
| Amount    | 9.5000 | 0.7553  | 12.58 | 0.000 |

$S = 1.99821$     $R\text{-Sq} = 96.9\%$     $R\text{-Sq}(\text{adj}) = 96.3\%$

- (a) Write the equation of the fitted regression line. Define any variables used in this equation.
- (b) Note that  $s = 1.99821$  in the computer output. Interpret this value in the context of this study.
- (c) Identify and interpret the standard error of the slope.